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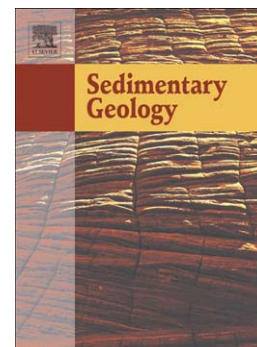
A double-cycle lake basin formed in extensional to transtensional setting: the Paleogene Nanpu Sag, Bohai Bay Basin, China

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**A double-cycle lake basin formed in extensional to transtensional setting:  
the Paleogene Nanpu Sag, Bohai Bay Basin, China**

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**Abstract**

It has been known that both extensional and transtensional tectonics commonly trigger a one-cycle evolution of lake sediments, but lake-cycle development co-controlled by extensional and transtensional tectonics still need identification. Here we report a double-cycle of lake sediments formed in extensional to transtensional phases in the Paleogene Nanpu Sag of the Bohai Bay Basin, China. The sag successively experienced five phases of lake-type evolution, characterized by: 1) overfilled, 2) balanced-fill, 3) overfilled, 4) balanced-fill, and 5) overfilled. Extensional tectonics was responsible for the opening of the basin and the initial creation of accommodation (1<sup>st</sup> through 3<sup>rd</sup> phase). Next, subsidence increased again through transtensional tectonics

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